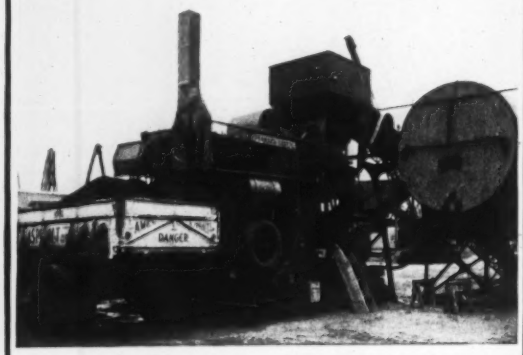
NEWS

Construction machinery at the Road Show – see p. 4.

TOMORROW'S MIXER TODAY

Barber-Greene Bituminous Travel Plant



Barber-Greene Bituminous Central Plant

BECAUSE 10 YEARS AGO we applied the modern high production fundamental principle of continuous material handling to bituminous mixing.

BECAUSE CONTINUOUS MIXING means handling a much smaller amount of material at any given moment—permitting a portable machine of relative small size, weight, and power consumption—yet producing a high daily capacity.

It means the aggregates and bitumen are fed into the starting end of the pug mill in a continuous small stream of the correct proportions. The pug mill needs only to mix cross-sectional increments of the continuous flow—not separate lump masses in large batch increments.

Continuous mixing requires continuous, automatic proportioning which can best be accomplished by volumetric proportioning—

BECAUSE CONTINUOUS VOLUMETRIC PROPORTIONING is accurate and fool proof. The accuracy of bitumen metering pumps is no longer questioned. The positive apron feeder and calibrated gate has demonstrated its constant measuring control on single and divided multiple aggregates.

* * * * * * *

WHEN the first B-G Bituminous Mixer was built ten years ago, none of its principles were to be found in any specifications. None of its principles were proven in actual jobs. It took foresight and courage to buy a Barber-Greene, but it paid profits to the courageous.

Thru the depression depths, we continued to design, manufacture, and sell continuous mixers. We refused to change to weight batching to pass specifications, as this would sacrifice the basic advantages. We have kept preaching continuous mixing and continuous, automatic proportioning because we know they are sound.

Now the Barber-Greene sells on RESULTS. Results of thousands of miles of finished road. Results of 10 years of job experience. Results of 100 Mixers in the field. Results that show the superiority of its principles.

The scope of the Barber-Greene is constantly widening. Its quality, speed, and economy were universally recognized in all types of Travel Plant work long ago. Its use in the Central Plant field has grown each year. Its cost savings over the conventional batch type Central Plant are obvious. It has been used more and more on the higher type mixes. Now with B-G aggregate gradation control, its application in the Central Plant field becomes unlimited.

These are not selling points, they are fundamental principles that have made the Barber-Greene constantly progress on merit alone. When you buy your Barber-Greene, you have the machine of TODAY and TOMORROW. You are riding the trend.

BARBER GREENE

AURORA, ILLINOIS

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ENGINEERING NEWS-RECORD

NEWS

Volume 124 FEBRUARY 8, 1940 Number 6

NOTES ON THE NEWS

Quick Surveys of Construction Events

▶ Aglow with success, Road Show officials declare $5,000,000 worth of equipment was exhibited at Chicago last week and $10,000,000 worth of orders taken. Even if the estimates are high, the show was undoubtedly the biggest both in size and sales of any yet held. A banner road building year is ahead.

▶ This week it is reported that Oklahoma City is drilling emergency wells to augment the city's water supply. Last week mention was made of certain central Pennsylvania towns facing a water shortage. New York City's problem of continued depletion of its reservoir supply remains unsolved. It all sums up that a great many cities, large and small, may expect similar trouble with the months of September, October and November being the driest on record for the entire nation, excepting three states (*ENR*, Dec. 21, 1939, p. 811).

▶ According to Washington reports, a total of 310 PWA projects, or $844,000,000 of construction, will not be completed by July 1, the required completion date. How federal authorities will deal with these projects has not been announced.

▶ With the work of moving Shawneetown, Ill., out of the Ohio River flood plain nearing completion. Other cities and towns similarly situated can study this waterproof method of flood protection first hand and compare it with the cost of other methods.

▶ Damage by ice to the Wright Memorial Bridge across Currituck Sound in North Carolina raises the question of how many bridges, highways, water works and sewage treatment plants were built in the South without taking into account such abnormal temperatures as have been experienced during the past few weeks.

Simpson Photo

NORMAN J. HOWARD
A.W.W.A. PRESIDENTIAL NOMINEE

The American Water Works Association has nominated Norman J. Howard, director of water purification, Toronto, Ont., for president of the society. Louis R. Howson, consulting engineer of Chicago, is the official vice-presidential nominee, and William W. Brush, present treasurer, has been nominated for reelection.

First State Housing Approved for New York

A $20,000,000 loan to reclaim 39 acres of slums in the navy yard district in the borough of Brooklyn, New York City, has been approved by Edward Weinfeld, New York state superintendent of housing. The project will house 3,528 low income families and be financed by state bonds, subsidies by the city and the state of New York, and by aid from the U. S. Housing Authority.

This is the first application for a state housing loan approved under the recently enacted New York state housing law, which is modeled upon the federal act which set up the U S H A.

Many PWA Projects Behind Schedule

Work on 310 projects totaling $844,000,000 not to be completed by July, the deadline

Next July 1, the required completion date for PWA projects under the 1938 program, there will be 294 projects uncompleted, with a total cost of $603,000,000, it was revealed during the hearings on the Independent Offices appropriation. Taking account of projects hanging over from previous PWA programs, there will be 310 projects still under construction on that date, with a total cost of $844,383,000; amounts still to be spent will total $215,492,000. By the end of the year all but 50 projects, with $30,000,000 still to be spent, will be completed. June, 1941, will find 12 projects still incomplete

(*Continued on p.* 2)

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Ice Damages Bridge In North Carolina

An ice jam caused the collapse of two sections of the three-mile Wright Memorial Bridge across Currituck Sound in North Carolina Feb. 2. The ice also damaged the transmission lines of the Virginia Electric Power Co., transmission of power to Roanoke Island being interrupted.

The sections of the bridge destroyed were near the draw span and produced a break of from 60 to 70 ft. The bridge, built on wooden piling, was constructed in 1928 by private interests and operated until 1935 as a toll structure, when it was bought by the state highway commission for $125,000. The total damage has not been determined.

Highway department officials are also concerned with the possible damage to other bridges in eastern North Carolina, highway crews having been dispatched to prevent ice damage to the $1,500,000 bridge across the Albemarle Sound and a $600,000 bridge across the Chowan River.

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Advances in Highway Bridge Design Noted

Improvement of past decade in economy, functionalism and esthetics cited

Notable improvements have been made in the past decade in the three fundamental considerations affecting bridge design; namely, economy, functionalism and esthetics, according to Leonard C. Hollister, designing engineer, bridge department, California Division of Highways, in a recent talk before the Structural Engineers' Association of Northern California. Experience with the various types of design, he said, has naturally led to better adaptation of structural materials to the art of bridge construction.

Smaller piers

In contrast with older types of heavy concrete piers that tapered from spread footings to a small top, the continuous type bridge, either in steel or concrete, is effectively supported on slender piers whose footings sometimes rest on only a single bent of concrete piles. This change in preferred design does away with troublesome joints, gives increased rigidity, more stiffness in the structure at roadway height and much decreased foundation loading.

Architectural treatment has been greatly simplified and, with "less concrete spinach," present-day treatment is more practical and the lines are more graceful. There has been a notable tendency away from through structures; the deck bridge (1) does not have structural members above the roadway where there is danger of serious damage by vehicles out of control and (2) it affords less interference with views of the scenery.

Box girder new type

A particularly notable development of the last decade, he said, is the hollow type or box girder concrete bridge. With advances in economy, appearance, and lighter dead loads, this type has rapidly come to the fore. A curious item worthy of further study has been the "flow" in concrete deck structures. Where there has been settlement at an abutment that has remained for considerable time before repairs were made, sometimes the deck slab has taken a set in the warped plane caused by the uneven foundation. In some cases these settlements have been a foot or more, with corresponding warp, without developing visible cracks.

Recent advances in the science of soil mechanics have made it possible to put abutment wall footings on fill with more confidence than heretofore could be justified in undisturbed material even of fairly compact character.

• • •

Philadelphia to Treat Water by Ozonation

A new process known as ozonation will be tried as a substitute for chlorination in an attempt to remove tastes and odors from Philadelphia's water supply, according to the Mayor. An experimental plant will be constructed near the Roxborough pumping station.

Although used extensively in Europe this will be among the first applications of the process in this country. This treatment was described in *ENR*, Feb. 1, 1940, p. 168.

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Alloys and Heat Treatment Shown by Westinghouse

A steel that retains its strength up to nearly red heat and a method of hardening bright steel parts without scale or tarnish formation were among the new developments exhibited by the research laboratory of the Westinghouse Electric & Mfg. Co. at East Pittsburgh, Pa., at a research conference held at the laboratory on Jan. 29. Other new things shown included a prismless mass spectrometer for quantitative estimation, a mechanical wave model for studying wave action, a lightning current recorder, a magnetic inspection instrument for detecting hard and soft spots in ball bearing shells, and a huge "atom smasher" built during the past two years which can produce radiation under the impulse of 4,000,000 volts.

The non-oxidizing heat treatment depends on the use of a blanketing atmosphere of hydrogen and nitrogen to exclude oxygen from the hardening furnace. Steel parts polished to mirror finish before hardening retain full brightness throughout the heat-treating process and therefore do not require regrinding. In conjunction with a new alloy steel containing vanadium, molybdenum and chromium, it permits of simplifying and cheapening many production processes and is expected to find special application in the manufacture of dies.

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PWA Projects

(*Continued from p.* 1)

and about $1,000,000 still to be spent.

Since its inception in 1933, PWA has made 3,145 loans totaling $557,237,000 (not including the early loans to railroads). Of these, 325 loans with a par value of $42,849,000 were in default on Oct. 31, 1939. Total amount of overdue payments was $3,061,000, of which $2,211,000 was unpaid interest.

Analysis of the defaulted loans reveals that nearly $6,000,000 are only technically in default; the biggest item here is a $5,035,000 loan to the District of Columbia for which Congress failed to appropriate the debt service.

Of the remaining defaults, about half consists of loans to the Loup River and Platte Valley power and irrigation districts in Nebraska—ascribed by PWA to "slow development" of the projects.

Various difficulties cited

PWA blames delayed completion of projects for a little over $11,000,000 of the defaults; biggest projects in this category are the Birmingham water supply project with a defaulted loan of $4,000,000, the Willacy County, Texas, Water District No. 1 owing $1,935,000, and the Maverick County, Texas, Water District No. 1 owing $1,642,000.

Engineering difficulties are blamed for defaults totalling nearly $1,000,000 on 30 projects. These were almost all water supply projects, and the commonest trouble was inability to obtain enough satisfactory water.

The remaining $7,000,000 of defaults is blamed by PWA on such things as poor management, inability to collect taxes, floods, "slow development," and "insufficient revenue."

Shawneetown Being Moved From Ohio Flood Plain

The Gallatin County, Ill., Housing Authority has been notified that it will receive $220,000 from the Work Projects Administration as federal aid for removing Shawneetown from the flood plain to a higher location. The project, which is sponsored by the Illinois department of public works and buildings, provides for the demolition of 120 frame and 49 brick structures, removal of 177 frame houses to the new site, clearance of old building sites, and improvement of the new area.

The State of Illinois is supplying $93,000 as the sponsor's share of the project, part of the money coming from $150,000 appropriation for the development of the old town as a state park. Funds have also been advanced for the relocation of the town water supply, and to date improvements at the new site have cost $680,000. A new school and a gymnasium have been completed, and a new courthouse is well under way; 27 houses have been relocated and 52 new buildings are under construction.

U. S. States Views on North Platte River Water

Government's statement before master in chancery asserts that its action in reserving unappropriated waters in 1904 for reclamation use is superior to later private appropriations.

In the suit of Nebraska against Wyoming and Colorado over water rights in the North Platte River, the federal government, which intervened last year, presented a statement of its case on Jan. 30 before M. J. Doherty, master in chancery for the U. S. Supreme Court, sitting in Denver, Colo. The government asserts that in 1904 it "reserved all the unappropriated waters of the river for use under the Reclamation Act," and that "from that time hence all rights acquired by private persons are in subordination to such reservation."

Government's position outlined

Settlement of the issues involved may affect all similar projects throughout the arid West. The government's statement includes the following points: The states have set up claims which violate settled rules of public policy adopted by Congress. Administration practice under state laws largely fails in relation to this interstate stream to accomplish the purposes ordinarily inherent in and associated with the beneficial use of water. In consequence some other method must be adopted if the waters of the North Platte are to be utilized without loss or impairment. The United States as conservator of the natural resource is in a position to solve the problem of control and distribution.

The 1904 Reclamation Act was set up to unite by artificial means the two great natural resources of land and water, and this purpose requires unqualified control. But this claim is not a denial to any state of its sovereign rights, nor does such control hinder or prevent development of water resources by the states; it does place in the hands of the Secretary of the Interior the sole right to determine the quantity of unappropriated waters required for use upon federal project lands and for fulfillment of its contracts.

Since the United States was the unqualified owner of all such waters, the statement holds that any claim which the states may make in regard to the ownership of waters by reason of local legislation or state constitution provision involves the fallacy of an individual making a deed to himself of other people's property and thereby acquiring a good title.

If these contentions are upheld, Western States attorneys indicate, state water decrees may be found of doubtful value. State officials are said to be considering the advisability of asking their congressmen to withhold authorization of new reclamation projects until a Supreme Court decision is rendered.

Caterpillar Tractor Photo

WASHINGTON NATIONAL AIRPORT TAKES SHAPE

THE NEW $10,000,000 Washington (D. C.) National Airport is shown taking shape on the Virginia side of the Potomac River. The landing field, to be one of the finest in the country when completed, is being built almost entirely on filled ground. For the 21,195 ft. of runway being built by removing topsoil down to firm material and then backfilling with sand and gravel pumped from the river may be seen.

The Mount Vernon Highway, which is being relocated by the Public Roads Administration, may be seen to the left.

The work is under the direction of the Civil Aeronautics Authority, the U. S. Engineers are placing the fill with their own and hired equipment, and the Public Building Administration is building the hangars and service buildings.

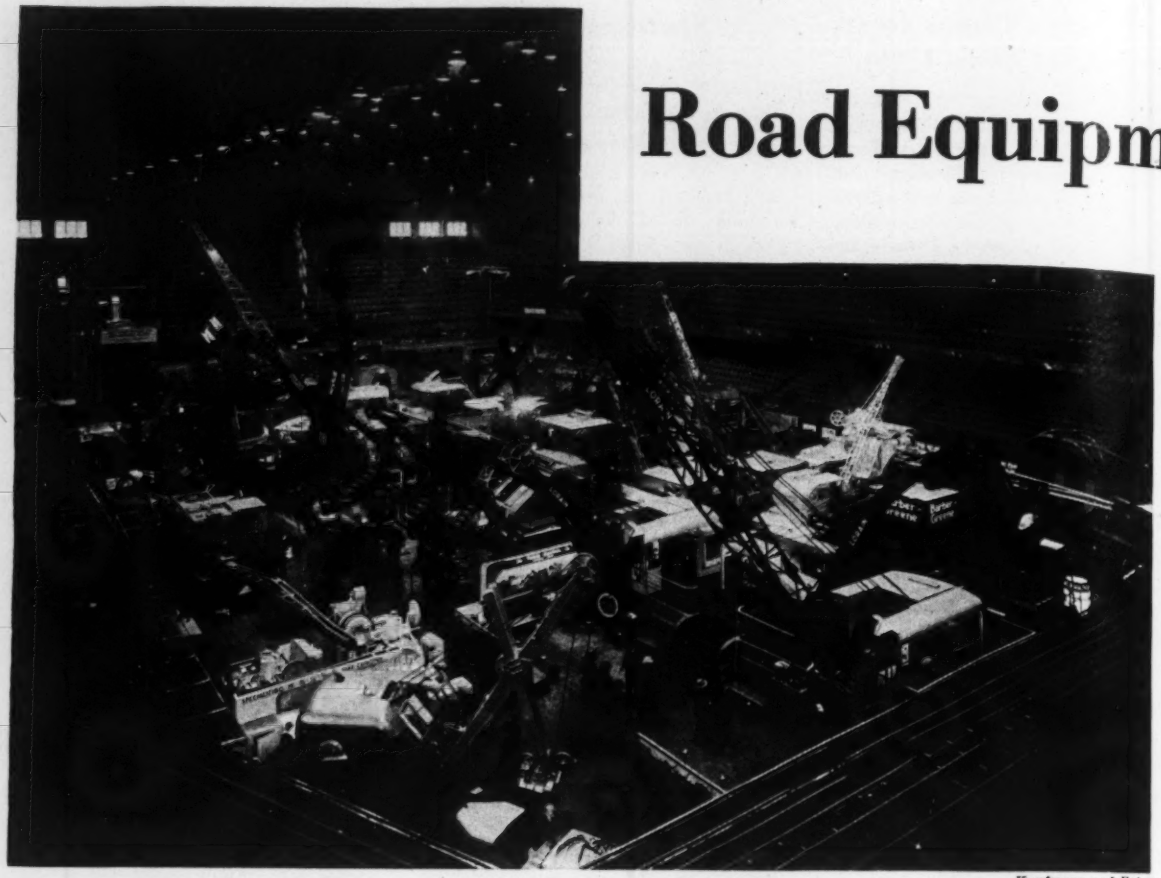
Additional construction details of the airport were given in *ENR*, August 31, 1939, p. 262.

• • •

Canada's War Supply Board Has Big Building Program

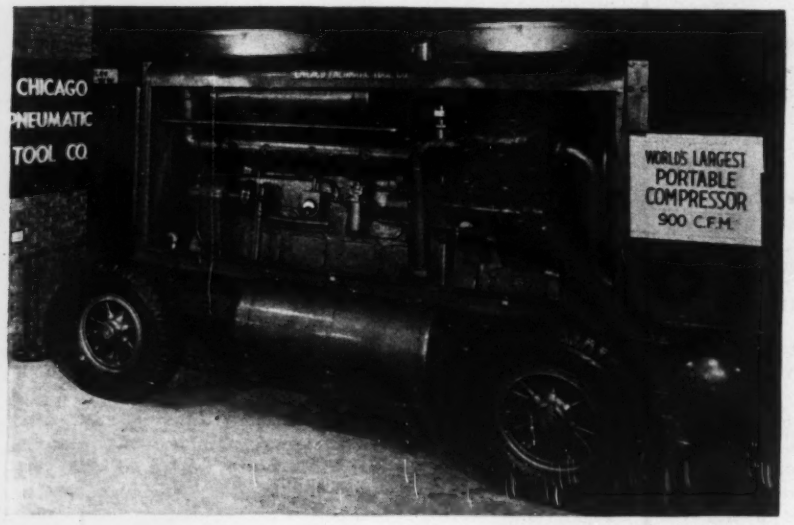
Canada's War Supply Board, with a staff of 250, has already let contracts for about $7,000,000 of construction, according to Major W. G. Swan, director of construction work for the board. Major Swan, in telling of the work before the recent meeting of the Vancouver branch of the Engineering Institute of Canada, explained that requisitions for purchases originate with the national defense department, the War Supply Board negotiating the actual contracts.

Road Equipme



Kaufmann and Fabry

GREATEST ROAD SHOW in the history of the American Road Builders Association held at the International Amphitheater in Chicago, Jan. 29-Feb. 2. This is a view of some of the heavier units occupying the arena.



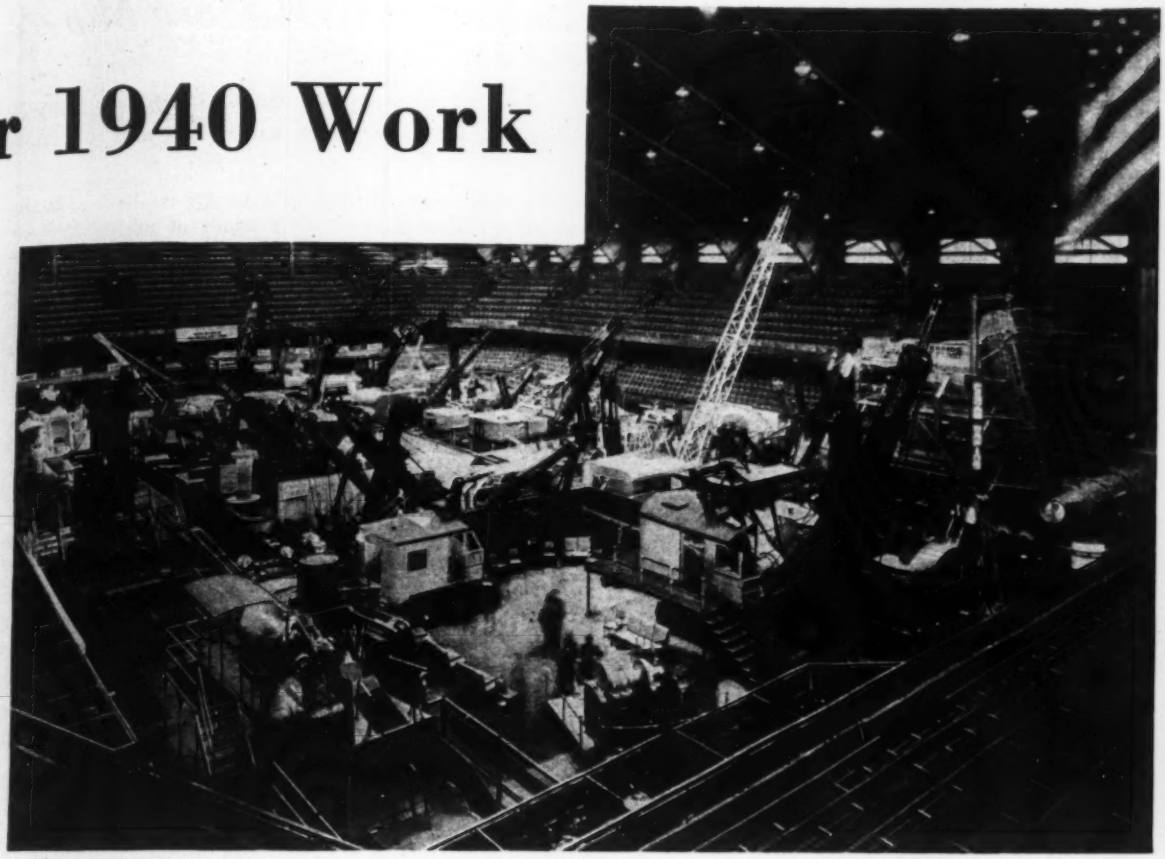
BIGGER AND BIGGER units is the trend of construction equipment development, typified by this 900-cu.ft. portable air compressor. A 45-yd. scraper is another example.

FORTY-EIGHT THOUSAND engineers and contractors thronged the International Amphitheater of the Chicago Stockyards last week to view the largest and most impressive road show yet staged by the American Road Builders Association. Nearly 300 exhibitors spread their wares over 8½ acres of floor space, made hideous noises in putting the machines through their paces, and hung "sold" signs on scores of units as their sales talks clicked. At least $5,000,000 of orders were signed up.

The show revealed that the trend of construction equipment development continues toward larger units, better engineering, easier control, use of alloy steels, anti-friction bearings and rubber tire mountings. New and improved machines and auxiliary units to meet requirements for better and more precise construction were in evidence.

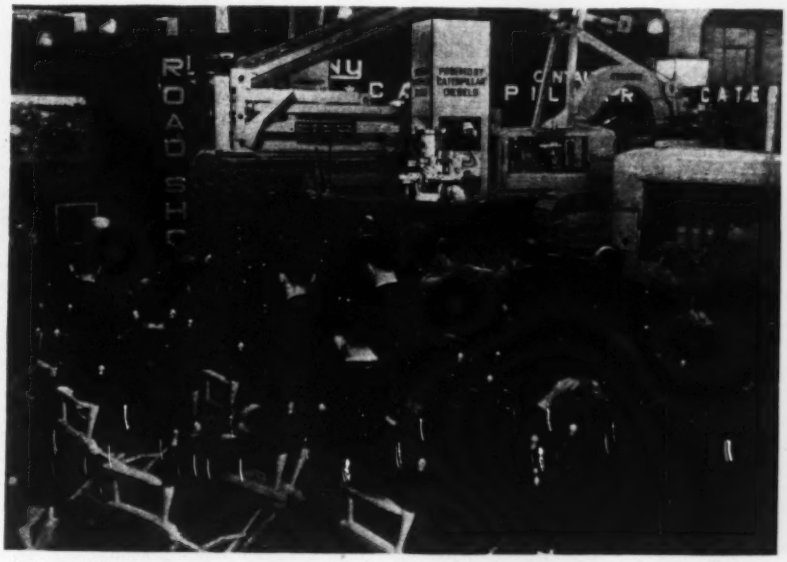
A complete report of all exhibits, compiled from a booth-to-booth inspection of the show, will be given in a special section of the Feb. 29 issue of *Engineering News-Record.*

er 1940 Work



CONSTRUCTION EQUIPMENT of every description was jammed into 8½ acres of space at the Amphitheater. This view from the other end of the arena from that shown on the opposite page shows only one-tenth of the total area of displays.

RUBBER, RUBBER EVERYWHERE. Large and small machines of all descriptions are mounted on pneumatic tires from 10 to 102 in. overall dimensions.



AN INTERESTED GROUP watches the movies of equipment in operation. Several such shows offered a haven of rest for foot-sore visitors.

Public Needs More Roads, Builders Need More Money

A.R.B.A. technical sessions at Road Show in Chicago emphasize problem of keeping roadbuilding abreast of traffic

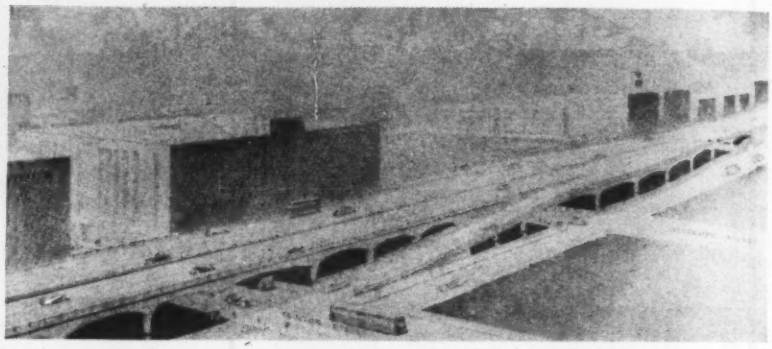
TAKING SECOND PLACE to the exhibit of road equipment in attendance and interest but yielding no ground in an attempt to match it in size and compass, the technical sessions of the 37th annual convention of the American Road Builders Association in Chicago, Jan. 29-Feb. 2, covered roads and road problems from nearly every possible angle. From county roads to elevated highways, from finance to traffic control and from soil mechanics to skid resistance, the papers and committee reports left little unsaid. Based on audience reaction they ranged from dull to brilliant. The program listed a total of 105 papers and reports. Some of the most timely and significant are discussed here, and others will be abstracted in the Feb. 29 issue.

Future business

In his address as retiring president, Murray D. Van Wagoner, Michigan state highway commissioner, gave expression to two views that bear on probable future activities in the road field: "Roads have been overbuilt in sparsely traveled areas while the choked traffic arteries in and around cities have been neglected." "Federal government support is necessary in acquiring needed rights-of-way." Hal G. Sours, chief engineer, Ohio State Highway Department and the new A.R.B.A. president, placed another problem on the agenda of future business—the proper integration of state and county road systems; he urged autonomy for each, with leadership made the responsibility of the state.

Van Wagoner also argued for road expenditures through the state highway departments as the best means available for unemployment relief and business generation, a view which found support in the banquet address of Willard Chevalier, vice president of the McGraw-Hill Publishing Co. and past president of the A.R.B.A. Chevalier took sharp issue with those who see in the mechanization of road building the germ of technological unemployment. Our road system would still be in the mud, he said, were it not for the rapid and low cost methods made possible by machines, and in that event the hundreds of thousands who run filling stations, make automobiles, own garages, and otherwise depend on roads would never have had these jobs. Similar thoughts were echoed at still another session by Henry F. Cabell of the Oregon State Highway Department, and president of the American Association of State Highway Officials. Those who lump roadbuilding with the federal activities which should be reduced in order to balance the budget should be made to realize, Cabell said, that roadbuilding is the best way available to increase business and therefore tax receipts which are necessary for a balanced budget.

Banquet speakers in addition to Chevalier included John M. Carmody, FWA Administrator, Congressman Wilburn Cartwright, chairman, and other members of the House Roads Committee, and H. V. Kaltenborn, radio commentator. At the banquet also the initial award by *Contractors and Engineers Monthly* of a cup for the best contribution to roadside development was made by Editor Theodore Reed Kendall to Winston & Griffiths, contractors of Dallas, Tex.



Elevated highway as proposed for Congress St. in Chicago

A.R.B.A. favors . . . . .

Diversion of highway tax money to other than road purposes by both the federal government and states was strongly criticized by every speaker who mentioned the subject, but when the resolutions committee proposed a "whereas-and-therefore-be-it-resolved" statement recommending that all highway taxes be used for highways, the delegates turned it down. They, however, approved resolutions favoring federal aid in the amounts provided in 1938 and 1939; federal financial aid for a start on the interregional highway system in 1940; federal aid in long term loans for rights-of-way acquisition; and the establishment of an international bank to issue bonds for financing completion of the Pan-American Highway, a plan proposed by Luis Montes de Oca, president of the A.R.B.A. Pan-American division and director-general of the Bank of Mexico.

Best attended of the sessions were those of the county highway officials division, with the newly formed airport division and the municipal divisions close seconds. The program devoted considerable attention to federal aid to secondary roads, an outstanding paper being an explanation of the current Public Roads Administration survey of such roads by H. S. Fairbank, chief, division of information, PRA.

Committee reports

The A.R.B.A. functions largely through committees, some two dozen of which made reports at the convention. Among them may be mentioned:

Elevated Highways—The only economical way of building arterial roads through cities is by elevated highways. Slum clearance and parks should not be added to the problem of traffic relief, else the cost will be greater than taxpayers will stand for. Elevated highways cost no more per lane than street widening; they require less right-of-way than a depressed express road.—V. G. IDEN, *American Institute of Steel Construction.*

City Streets—Arterial highways through cities and bypasses around them must be protected from local encroachment so that they do not become "just another city street." The PRA survey of rural highways now going on should be extended to include city streets.—WALTER N. FRICKSTAD, *city engineer, Oakland, Calif.*

County-State-Federal Relationships—Direct contact of counties with PRA might be advisable to supplement present setup in which state acts as intermediary. Lack of respect for county engineers by state highway departments can only be improved by raising calibre of county engineers above politician status. Federal aid on local roads should be administered by a state

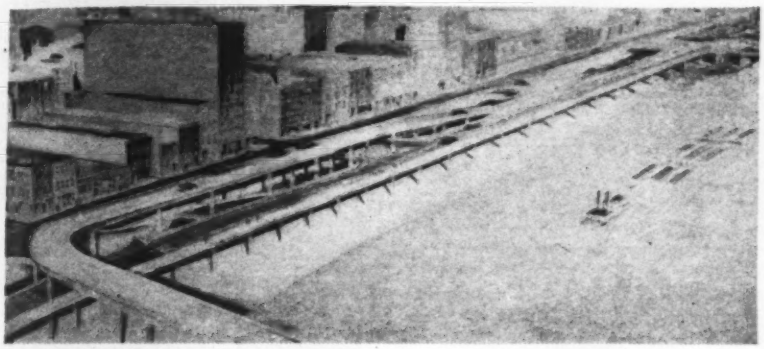
agency that is permitted large discretion by PRA in setting local standards.—ALAN N. BUCK, *superintendent of highways, Macon County, Ill.*

Diversion—Highway money diverted to other uses in 1938 constituted 12 per cent of the total, an amount which would have permitted 60 per cent more new construction than was undertaken. Most of diversion is in 20 states. Seven states—California, Colorado, Kansas, Michigan, Minnesota, Missouri, and New Hampshire—prohibit diversion. In 1940, Idaho, Nevada, and South Dakota will vote on anti-diversion constitutional amendments. Iowa and Wisconsin are planning such a vote.—E. E. DUFFY, *Portland Cement Association.*

City Traffic—Reduction of accidents in cities has been somewhat greater than on rural highways. Accident reporting should be made mandatory and the law enforced. Accident data should be used by city engineers in eliminating danger spots. Signals are not so much for safety as for traffic movement. There is a trend toward audible warning signals. Total signal intervals has been let and does not take into consideration the fact that nearly three-fourths of the money is for projects ready to go.—ROBERT B. BROOKS, *Missouri highway department.*

Skid Resistance—Attempts are being made to develop equipment and test methods for evaluating skid resistance of various types of pavements. Measurements on the road are necessary. Coefficient of friction of 0.40 at 40 mph is generally safe. All hard surfaces are safe when dry. Friction coefficient decreases markedly with increase in speed when surface is wet. Tire with largest contact gives greatest skid resistance. Most important skid resistant quality of a surface is its ability to shed water quickly.—T. E. STANTON, *California highway department.*

Highway Lighting—Inadequate visibility is greatest single cause of a night death rate from traffic accidents three times the day rate. Use of sodium vapor lights through cities helps to mark the main route as well as providing high visibility. Wider use of lighting would cause



Trafficway now being built along Water St., Pittsburgh

should be shortest possible, as an aid in keeping the pedestrian from crossing against the light. Pedestrian traffic control is badly needed.—H. E. STEDMAN, *safety engineer, Des Moines.*

Alignment, Grade, Rights-of-Way—Adequate rights-of-way should be purchased as early as possible; economize in initial pavement cost rather than in right-of-way. An 80 mph speed is a good basis for alignment and grade designs; a 2-deg. curve, 2000-ft. sight distance are considered satisfactory. Since such designs are not possible over long distances on any one route, roads should be marked for specific safe speeds. R. GETTY BROWNING, *North Carolina highway commissioner.*

Highway-Railway Separations—Congress should appropriate $50,000,000 per year for the railroad-highway grade crossing program. Present appropriations of $20,000,000 for the fiscal year 1940 and $30,000,000 for the fiscal year 1941 when apportioned among all of the states leave amounts that are so small as to make it difficult to select projects on the basis of relative hazards. PRA in its latest report showing the "balance of funds available for program projects," shows about $42,000,000 in the highway grade crossing fund. This is more apparent than real because it includes all projects on which no contract

more night travel, increasing load factor on highways and thus giving a greater return for money invested in roads. General Electric has developed a lighting evaluator which permits practical appraisal of lighting effectiveness and analysis of traffic accidents in relation to visibility.—BERNARD C. HARTUNG, *Nevada highway department.*

Guard the pedestrian!

Burton W. Marsh, director, safety and traffic engineering, American Automobile Association, characterized the pedestrian fatality situation as an epidemic that is being ignored. Pointing out that 75 per cent of all persons killed in traffic accidents are pedestrians, he analyzed the nationwide data in a homely yet vivid way. Grandpa, he said, is the one who is being killed most frequently. Furthermore, Grandpa is killed at night (he always wears dark clothes) and usually he has been drinking. These facts are contrary to the general opinion that children are the most frequent victims. Children figure in more accidents, Marsh said, but more of them recover. Accidents to children decrease greatly after they start to school where traffic safety is taught. Engineers should provide physical barriers against crossing streets except at designated points, and they should provide safety islands between every two vehicle lanes, in Marsh's opinion.

Roadbuilding at airports

If one division were to be singled out for attention over all others it would be that of airports, since this was the first convention in which it had participated and because the meetings were unusually well attended. Floyd E. Evans, president of the division and director, Michigan state board of aeronautics, emphasized the need for supporting the Civil Aeronautics Authority's recommendation to Congress that federal aid be provided local governments for airports on a basis similar to that provided for roads. Estimates are that airports in the United States should total 3500 to 4000 at the end of the next five years. Of these we now have 2200, many of which, however, need extensive modernization. Although much work has been done on airports in recent years, it has been accomplished by relief labor at an exorbitant cost. Evans urged that all future work be done by contract and that airport construction be detached from relief in the interest of speed and efficiency.

A. B. McMullen, chief of airports, C.A.A., discussed the same problems in his paper on "The Necessity for an Adequate System of Airports" and told of the work of the C.A.A. in establishing airport standards and in general of acting as adviser and coordinator in the airport field in much the same way that PRA operates in the highway field. As indicative of the airport problem from the construction viewpoint, Major McMullen cited the fact that the paved runways and aprons at the Chicago Municipal Airport are the equivalent of 103 miles of 20 ft. pavement while those at the airport at Moline, Ill., a city of 32,000 population, are the equivalent of 14 miles of such pavement. That hard surfaced runways do not constitute the only problem was emphasized by W. S. Housel, University of Michigan. Most airports will need large areas of low cost durable surfaces in addition to paved strips, and in this the new science of soil mechanics has already demonstrated its value.

Prominent on the program of some of the other sessions were papers on the Pennsylvania Turnpike, the Pan-American Highway, and the proposed U. S. to Alaska Highway. One paper also dealt with the current promotional efforts to establish a plan for a Mississippi Valley Parkway connecting national parks and major cities along the Mississippi River from Minnesota to the Gulf of Mexico.

Men at Work At the 1940 Road Show

GENIAL **Frank Nikirk**, contractor's representative of the Caterpillar Tractor Company, worked day and night greeting his multitude of friends.

GATHERED at the opening ceremonies of the 1940 Road Show in Chicago, Jan. 29 (left to right) **Chas. M. Upham,** Engineer-Director, A.R.B.A.; **Hal G. Sours,** new president, A.R.B.A.; Congressmen **Jennings Randolph** and **J. W. Robinson** of the House Roads Committee; **Murray D. Van Wagoner,** retiring president; and **W. T. Chevalier,** past president.

Kenneth L. Park, chief engineer for R. G. Le Tourneau, Inc., is dwarfed by one of the 8½-ft. tires of his new 45-yd. scraper.

WORKING for more and better roads are **Hal. G. Sours,** of Ohio (second from left), newly-elected president of the American Road Builders Association, and Congressmen **J. W. Robinson,** of Utah, **Jennings Randolph** of West Virginia and **Wilburn Cartwright** of Oklahoma, members of the House Committee on Roads.

MEN AND JOBS

RICHARD KING, who has been working as senior office assistant at Brownwood District No. 23, of the Texas State Highway Department, is now on a year's leave of absence for study at Armour Institute of Technology to obtain a master's degree in civil engineering.

L. L. BOGGESS has been reappointed engineer of Emmett County, Ia., with headquarters at Estherville, and N. K. BROWN has been reappointed assistant engineer.

GEORGE E. WEARN, for many years with the Republic Steel in charge of the sales department, has joined Murray and Flood, Inc., New York City, as vice-president on new development. Wearn was also sales engineer for a time with the Westinghouse Electric at the central station.

LIEUT. RAYMOND LAMOREAUX has been transferred from duty at the Navy Yard, Philadelphia, Civil Engineering Corps, U. S. Navy, to do duty in the 15th Naval District, Balboa, C. Z. He relieved LT. JOSEPH WHITE.

D. G. MOON, once chief engineer in charge of mill expansion for the Continental Paper & Bag Corp., has joined the engineering staff of the J. E. Sirrine & Co., consulting and designing engineers of Greenville, S. C. Moon, who was chief engineer for the Union Bag & Paper Corp., during the development of the southern mill at Savannah, Ga., was in private practice for a time.

JOHN J. GOULD, until recently structural engineer for the Golden Gate International Exposition, has opened an office as consulting structural engineer in San Francisco.

DWIGHT KELLER, of Lancaster, Ohio, has been appointed chief superintendent of Lancaster's new sewage treatment plant.

HARRY L. PRICE, for 8 years superintendent of state highways in Preble County, Ohio, retired Jan. 1.

STEWART A. WADE, who conducted a contracting business for many years specializing in the erection of structural steel and associated operations, has been appointed manager of the construction and industrial division of the H. O. Penn Machinery Co., New York City. Wade aided in the building of the Independent subway system in New York City. For the past several years he has been with the Penn firm in a sales and engineering capacity.

COL. U. S. GRANT, 3d, has been transferred from the General Staff Corp. at Governors Island, N. Y., to serve as division engineer, U. S. Engineers, Great Lakes Division, Cleveland, Ohio.

WILLIAM L. SPOON and CHESTER F. LEWIS, members of the firm of Spoon & Lewis, consulting engineers of Greensboro, N. C., have dissolved partnership.

PAUL A. BLACKWELL, chief engineer with the Virginia Bridge Co. since 1929, has retired. He is succeeded by C. W. OGDEN, assistant chief engineer since 1922. Ogden's position is to be filled by W. N. WOODBURY, who has occupied the position of division engineer at Birmingham, Ala., since 1926.

H. E. ROBINSON, engineer with the U. S. Bureau of Reclamation at Casper, Wyo., and a past president of the Wyoming Engineering Society, has been transferred to the Tucumcari, N. M. project to serve as field engineer in charge of construction. Robinson once served as vice-president of the Wyoming board of engineering examiners.

H. E. ECHOLS, director of operations for the Works Project Administration in Idaho and supervising all WPA engineering activities in Idaho, has resigned. He is to be succeeded by LEWIS ROBERTS of Boise, Idaho.

H. M. ARMSTRONG, Fredericton, N. B., and a member of the engineering staff of the New Brunswick public works department, has been appointed to an interdepartmental committee chosen by the New Brunswick government to cooperate with the dominion government on wartime activities.

ALLEN R. BOUDINOT, of Rock Island, Ill., has been appointed city engineer of Silvis, Ill. Boudinot's first job will be to prepare a map of the city.

GEORGE W. PLAISTED, vice-president in charge of West Coast operations of the Austin Co., Cleveland, for the past seven years, has been named vice-president and general sales manager. Plaisted, a graduate of the Worcester Polytechnic Institute, was first associated with the Austin firm in 1916. As a lieutenant in the Civil Engineers Corps, U. S. Navy, during the World War, he served as assistant public works officer at the Puget Sound Navy Yard and for the thirteenth Naval District. In 1921 he was ordered to Pensacola, Fla., as public works officer, leaving there to return with the Austin Co. in 1922.

J. E. ARMSTRONG, chief engineer of the Canadian Pacific Ry., was recently elected president of the Canadian Railway Club.

R. L. BROWN of Sledge, Miss., has been appointed personnel director of seven northern Mississippi counties for the Mississippi State Highway Department. He will serve as coordinator between the department and contractors.

J. C. PARK, associate professor of civil engineering at the University of Arizona, has been appointed a member of the American Road Builders Association committee on highway teaching.

WILLIAM V. ALBRIGHT is now regional engineer for the Farm Security Administration for the region embracing Alabama, Georgia, Florida, South Carolina and the Virgin Islands. He succeeds LEO F. STOCK, who has been transferred to Washington as assistant to the national chief engineer.

MAJ. EDWARD M. GEORGE, who has been on duty at the Ogden, Utah ordnance depot, U. S. Engineers, has been assigned to serve as construction quartermaster for the new Alaskan air base being constructed at Fairbanks. Major George will report at Fairbanks about April 1.

FRED N. THOMPSON, Charlotte, N. C., is the new chairman of the North Carolina Licensing Board of Contractors, having succeeded CHARLES W. ANGLE, of Greensboro, who continues to be a member. U. A. UNDERWOOD of Wilmington is vice-chairman and WARREN J. MANN of Raleigh is secretary. Other members are: V. P. LOFTIS, of Charlotte, and F. D. CLINE, of Raleigh.

AMOS PETERSON has resigned his position as engineer for Marion County, Kan., to become sales representative for the Ash Grove Lime & Portland Cement Co. to be located at Salina, Kan.

H. C. HINDERLIDER, state engineer for Colorado, is working with A. C. Tilley, state engineer of Nebraska, and George Knapp, state engineer of Kansas, on a proposed tri-state compact for use of the waters of the Republican River.

J. E. GOODMAN, engineer of the county of Frontenac, Ont., has resigned and is now captain in the Canadian Active Service Corps.

GEORGE M. BULL, regional director of the Public Works Administration with headquarters at Fort Worth, Tex.,

resigned Jan. 31. Bull was transferred from Denver in 1937 to be in charge of operations in Arkansas, Colorado, Kansas, Louisiana, New Mexico, Oklahoma and Texas.

R. E. ROBERTSON of Mason City, Iowa, has begun his 26th year as engineer of Cerro Gordo County, Iowa.

DE G. DUPUY, formerly chief inspector for the Appalachian Power Co. on Radford Dam in Virginia, is now employed as construction engineer for the Panama Canal. He sailed for his new duties Jan. 25.

J. LEVENS, engineer of Prince Edward County, Ont., has resigned to become lieutenant in the Canadian Active Service Corps.

ARTHUR A. TUTHILL, Ridgefield Park, N. J., since the first of the year has been serving as engineer for the village of Little Ferry, N. J. Tuthill has been in private civil engineering practice for the past ten years.

WILLIAM H. CONNELL, chief engineer from 1912 to 1917 of the bureau of highways and street cleaning, Philadelphia, has been appointed assistant director of public works for that city. Connell was educated at Fordham University and LaSalle Institute and for a time worked with Day & Zimmermann, Inc., Philadelphia, as an engineer, leaving there in 1919. From 1933 to 1936 he served as federal civil works administrator in Philadelphia. He succeeds HARRY J. LEARY.

MAJ. H. B. VAUGHAN, JR., U. S. Engineers, for the past two years chief of the marine design section, office of the Chief of Engineers, Washington, D. C., has been ordered to duty as district engineer in the Philadelphia district. In addition to the usual duties of a river and harbor district assignment, Major Vaughan will continue to supervise the design, construction and purchase of major floating plant equipment for the engineering department.

RALPH W. GEARHART, Cedar Rapids, Iowa, has been engaged by Marion, Iowa, to act as consulting engineer during 1940. A large street improvement program is planned.

MEETINGS

AMERICAN SOCIETY FOR TESTING MATERIALS regional meeting, Hotel Statler, Detroit, Mich. March 4–8.

AMERICAN RAILWAY ENGINEERING ASSOCIATION, Chicago, March 12–14.

NATIONAL RIVERS AND HARBORS CONGRESS, annual convention, Mayflower Hotel, Washington, D. C., March 14–15.

AMERICAN CONCRETE INSTITUTE, Chicago, Ill., Feb. 27-29.

REGIONAL AND LOCAL

ASSOCIATION OF HIGHWAY OFFICIALS of North Atlantic States, annual convention, Hotel Ambassador, Atlantic City, Feb. 14–16.

MONTGOMERY, Ala., Engineers Club, Ladies Night, Whitley Hotel, Montgomery, Feb. 14.

MISSISSIPPI SOCIETY OF ENGINEERS, annual meeting, Jackson, Miss., Feb. 15–16.

WESTERN ASSOCIATION OF STATE HIGHWAY OFFICIALS, annual convention, Santa Fe, N. M., Feb. 16.

SOUTHWEST ROAD SHOW AND SCHOOL, Wichita, Kans., Feb. 20–23.

ONTARIO GOOD ROADS ASSOCIATION, annual meeting, Royal York Hotel, Toronto, Feb. 21-22.

IOWA ENGINEERING SOCIETY, annual convention, Ames, Feb. 29–March 1.

ARKANSAS ENGINEERS CLUB, annual meeting, Hotel Marion, Little Rock, Feb. 23-24.

HIGHWAY ENGINEERS and Commissioners of the Upper Peninsula (Michigan), Houghton, Mich., Feb. 23-24.

AMERICAN WATER WORKS ASSOCIATION, Southeastern Section, annual convention, Birmingham, Ala., Mar. 18-20.

NEW JERSEY SEWAGE WORKS ASSOCIATION, silver anniversary convention, Trenton, N. J., Mar. 20-22.

NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION, annual meeting, Hotel Haddon Hall, Atlantic City, March 20–22.

AMERICAN WATER WORKS ASSOCIATION, Canadian section, annual convention, March 27-29, London, Ont.

ELECTIONS AND ACTIVITIES

W. S. HANNAN, of Pierre, was elected president of the South Dakota Society of Engineers and Architects at the 21st annual meeting Jan. 13 at Pierre. H. M. Pierce, Huron, was elected vice-president; W. W. Towne, Pierre, was re-elected secretary-treasurer. The executive council includes: Ralph Reed, Watertown; J. O. Kammerman, Rapid City; W. R. Edgington, Mitchell, and J. W. Henryl, Aberdeen.

MURRAY D. VAN WAGONER, president of the American Road Builders' Association and highway commissioner of the state of Michigan, was the featured speaker at the annual meeting of the North Dakota Highway Contractors' Association held Jan. 4 at Fargo. Van Wagoner praised the North Dakota legislature for reenacting a law that would prevent the diversion of highway taxes to other uses. Z. E. Sevison, state highway commissioner of North Dakota, was also a speaker. About 150 attended. Officers elected are: Milton Rue, Bismarck, president, and George E. Haggart, Fargo, vice-president. Directors for the next two years are Vice-President Haggart, Bert Monson of Bismarck and Percy Schultz of Towner.

AT THE SEVENTH ANNUAL convention of the Colorado Association of Highway Contractors held Jan. 13 at Denver, Colo., A. S. Horner was elected president. Other officers are: Charles Berry, first vice-president; C. V. Hallenbeck, second vice-president; C. L. Hubner, secretary-treasurer, and James B. Kenney, managing director. All of the men are from Denver. The association adopted a resolution urging the state of Colorado to let certain work done by oiling crews for contract in order to secure more federal-aid funds. It was also urged that the state legislature provide additional revenue to match all federal aid appropriations to the state, it being said that the state highways will lose about $1,300,000 this year as a result of insufficient state funds to match federal aid.

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License Examinations

IOWA: Examinations for professional engineering, Mar. 13-14; for land surveying, Mar. 15, State House, Des Moines.

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Engineering Conferences

THIRD annual conference on foundation engineering and soil mechanics, engineering department, University of Texas, Austin, Feb. 23–24.

HIGHWAY CONFERENCE, University of Michigan, Ann Arbor, Mich., Feb. 14-16.

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Short Courses

SCHOOL for Water and Sewage Plant Operators, College Station, Tex., Feb. 19–23.

ILLINOIS WATER WORKS, University of Illinois, Urbana, Ill., March 4-8.

BRIEF NEWS

In the Feb. 1 issue of *ENR*, p. 33, it was incorrectly stated that Mason & Hanger Co., New York City, had the contract for the original Rays Hill Tunnel on the Pennsylvania Turnpike. The job that the Mason & Hanger Co. started was the Tuscarora Tunnel now being completed by B. Perini & Sons, Framingham, Mass.

Lyter Donaldson, newly appointed Kentucky state highway commissioner, has ordered a 25 per cent reduction in salaries for the personnel of the highway department, about 125 employees to be affected. In addition, a number of men are to be discharged.

The state of Texas injunction suit to prevent fifty-three Texas oil companies from polluting the Neches River system (*ENR* Nov. 23, 1939, p. 671) has been settled out of court. Forty-four companies have signed an agreement whereby they will pay the salaries of three engineers hired to study the problem. They have also agreed to follow the engineer's recommendations as to the diversion of waste, principally salt water, from the watershed of the Neches River. Suits are pending to end pollution of the Sabine River.

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Emergency Wells Drilled By Oklahoma City

The city council of Oklahoma City on Jan. 30 authorized the drilling of 12 emergency wells to augment the city water supply now obtained from Lake Overholster, city engineers having estimated that the lake will be drained by April 15 unless replenished by rain or auxiliary supplies. The new wells are expected to produce about 5,000,000 gallons daily, about one-third of the city's daily consumption.

A $4,350,000 improvement to the city's system has been under consideration for sometime (*ENR* Nov. 16, 1939, p. 657).

ALABAMA HIGHWAY LIGHTED AFTER ACCIDENT STUDY

Lighting equipment has been installed along the Alabama highway between Gadsden and Attalla free of charge by the Alabama Power Co., the Alabama State Highway Department to pay for power and maintenance. The installation follows a study of highway accidents, which showed that in 1938 58.5 per cent of all accidents on Alabama highways occurred at night when only 25 per cent of the traffic was reported.

The experimental stretch lighted is 2.25 miles in length, leaving more than a mile unlighted for comparison. For the lighting eighty-three 6,000 lumen pendant type Mazda luminaries were mounted 25 ft. above the pavement on a 125 ft. staggered spacing. The resulting illumination is said to be about eight times maximum moonlight intensity. The highway, carrying traffic of U. S. Highways 241 and 411, has a four-lane, 40 ft. roadway of light colored concrete.

Aluminum Co. Plans Big Building Program

Work already started on a $30,000,000 expansion program

With the start of construction on its new metal-producing plant in Vancouver, Wash., the Aluminum Company of America has inaugurated a $30,000,000 expansion program to increase its production facilities. The Vancouver plant, with other additions and improvements in the bauxite, alumina and metal-producing divisions of the company, will account for about $18,000,000. This work includes a bauxite plant in Paranam, Surinam (Dutch Guiana); additions to the Mobile, Ala., alumina works; improvements in the East St. Louis, Ill., alumina works; additions to the Alcoa, Tenn., metal-producing plant, and improvements in the hydro-electric stations along the Little Tennessee River.

The remaining $12,000,000 will be used in balancing facilities in the company's fabricating operations. At New Kensington, Pa., a new metallurgical laboratory is being erected, additions are being made to the melting and heating facilities of the strong alloy mill; an extension is being made to the warehouse, and another wing is being added to the Aluminum Research Laboratories. At the New Kensington laboratories there is also being installed one of the world's most powerful testing machines, a machine capable of exerting 3,000,000 lb. in compression and 1,000,000 lb. in tension.

In Alcoa, Tenn., the company plans an extension to its rolling mill to increase the production of sheet for aircraft use more than 1,000,000 lb. a month. At Massena, N. Y., the facilities of the structural and merchant mills are being increased, while additions will be made to the company's rolling facilities in Edgewater, N. J., to the die casting operations in Garwood, N. J., to the forging equipment in Cleveland, Ohio, and Los Angeles, Calif., and to the extrusion facilities in Lafayette, Ind.

The program follows increasing demands for aluminum in many different industrial fields. A total of $26,000,000 was spent in 1937, 1938 and 1939.

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Nebraska Gas Tax Held Constitutional

The Nebraska State Supreme Court has ruled that the one-cent Nebraska gasoline tax is constitutional. This releases $396,000 state funds which had been held up since July, 1939, and will permit $2,462,000 of road construction to be carried out with federal aid.

Listing Aids Engineers Released by PWA

Regional offices of the Public Works Administration are actively engaged in classifying the engineers that they have released or will soon release as to the character of the work for which their training and experience best qualifies them. The principal classifications are sanitary engineering, tunnels, bridges, mechanicals, electricals, etc. The closing out of the PWA program that is now in process is releasing many engineers with an extensive background of practical experience that has been supplemented by several years in executive administrative work for the PWA.

Records of the released men are to be presented to interested parties.

A news item on the subject of the release of PWA engineers in our issue of Feb. 1 incorrectly stated that the engineers were being released by WPA.

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Concrete Work Completed For Ross Dam

Concrete placing for Ross Dam, which is being built on the Skagit River by the city of Seattle, Wash., was completed Jan. 30 under a $4,000,000 contract by the General-Shea-Columbia Co. Construction of a 15-ft. wall of cribbing along the top of the dam remains, this work being scheduled for completion by March 31.

The cribbing will bring the height of the dam to El. 1380, 305 ft. above bedrock. Later the height of the dam will be increased to 653 ft.

OBITUARY

E. W. Bowen, 51, building contractor of Gastonia, N. C., died Jan. 28 in that city. Bowen was one of the organizers of the Gaston Construction Co., and for the last several years had been associated with Robert H. Pinnix, local building contractor.

Herbert A. Frankenstein, construction engineer who supervised the building construction for the Texas Centennial Exposition at Dallas, Tex., died Jan. 29 at El Cajon, Calif.

Manual Rodriquez Gutierrez, 57, civil engineer and former minister of communications and public works in Mexico, died in Piedras Negras, which is opposite Eagle Pass, Tex., while inspecting an irrigation project being carried out under his direction.

Basil Duke, 77, retired topographic engineer of the Geological Survey, died last week in Washington. Duke was employed by the Geological Survey continuously from 1886 until his retirement in 1932, with the exception of two years spent as a captain in the engineer corps during the World War. Duke was educated at the University of Kentucky.

Edward R. Hyde, dean of the college of engineering at the University of the Philippines, died Feb. 5 in Manila.

John H. Donohue, 88, pioneer St. Paul general contractor and builder, died recently in that city. In addition to many large structures in St. Paul, Donohue built Fort Yellowstone and Fort Lincoln for the federal government.

Other recent deaths include: John Leamy, 70, contractor of Syracuse, N. Y., and a former member of the contracting firm of Leamy Bros., Syracuse; Harold R. Brumbach, 44, general contractor of Ilwaco, Wash.; F. D. Lewis, senior member of the firm of F. D. Lewis & Son, contractors of Greensboro, N. C.; Hubert Lovelady, 60, builder of Tucson, Ariz.; Morris B. Evans, 55, engineer of Tucson, Ariz.; Samuel E. McColl, 53, director of surveys for the province of Manitoba, Canada; J. E. Lassiter, 67, contractor at Smithfield, N. C.; Joseph S. Daniell, 49, contractor of Birmingham, Ala., and J. O. Parr, 62, architect of Oklahoma City.

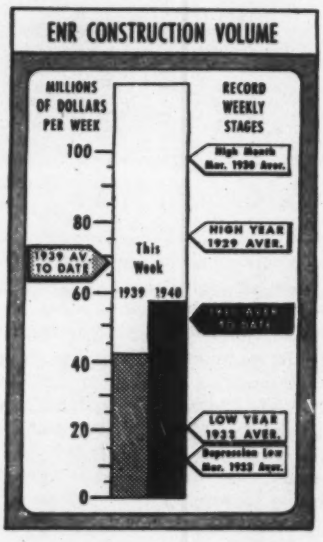
CONTRACTS AND CAPITAL

Engineering construction awards for the week total $57,523,000, an increase of 38 per cent over the corresponding 1939 week, but 9 per cent below the volume for a week ago.

The current week's volume brings 1940 construction to $312,442,000, a level of 24 per cent below the total for the corresponding 6-week period last year. Private construction for the six weeks, $112,565,000, is 39 per cent higher than in 1939.

Private awards for the week top last year by 91 per cent, but are 37 per cent lower than a week ago. Public construction tops a year ago and a week ago by 19 and 24 per cent, respectively.

In the classified construction groups all classifications except sewerage report gains over a year ago. Waterworks, bridges, public buildings, earthwork and drainage, and streets and roads are above their respective totals for last week.



New capital for construction purposes for the week totals $5,737,000, a drop of 87 per cent from the corresponding 1939 week. The week's financing is made up of $4,305,000 in state and municipal bonds, and $1,432,000 in corporate security issues.

New construction financing for the year to date, $120,644,000, is 3 per cent below the volume for the initial 6-week period in 1939.

CONTRACTS

(Thousands of dollars)

	Week Ending Feb. 9 1939	Feb. 1 1940	Feb. 8 1940
Federal	$2,299	$7,570	$8,829
State & Municipal	28,179	21,454	27,329
Total public...	$30,388	$29,024	$36,158
Total private..	11,146	33,918	21,365
TOTALS	$41,534	$62,942	$57,523
Cumulative 1940 .....(6 weeks).....			$312,442
1939 .....(6 weeks).....			$412,263

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1939 6 Wks.	1940 6 Wks.
NON-FEDERAL ...	$124,468	$120,644
Corp. securities..	18,645	14,830
State & Mun....	90,192	60,574
R.E.A. loans.....	15,631	.....
U.S.H.A. loans...	.....	45,199
R.F.C. loans.....	.....	61
FEDERAL	$.....	$.....
TOTAL CAPITAL..	$124,468	$120,644

FHA MORTGAGES

	Week Ending Feb. 4 1939	Jan. 27 1940	Feb. 3 1940
Selected for appraisal	$19,725	$16,483	$16,000*
Cumulative 1940 .....(5 weeks).....			$77,119*
1939 .....(5 weeks).....			$88,289

* Subject to revision.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Feb., '40	238.32	114.56
Building Cost	Feb., '40	201.50	198.93
Volume	Jan., '40	173	76

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

FILTER PLANT, RESERVOIR TOLEDO, OHIO

OWNER: City of Toledo, Ohio, Division of Water, George N. Schoonmaker, city manager; Greeley and Hansen, Chicago, engineers.

PROJECT: Construction of filter plant structures and reservoir for Toledo's Lake Erie Water Project. Involves construction of substructures and superstructures for filter plant proper consisting of sedimentation basins, reaction basins, filter tanks and certain equipment. Eighty m.g.d. capacity. Reservoir to be of reinforced concrete construction, underground, with 35 million gallons capacity. Plant located just outside northeastern city limits, but Toledo code and ordinances prevail.

CONDITIONS: Contractor to furnish all materials and complete work by December 31, 1940. Rail, highway and water transportation facilities available. Wages stipulated are: skilled, $1.50 to $1.65 per hr.; semi-skilled, $1.00 to $1.25; and common labor, 75c. to $1.00 per hr. Bids were taken on two capacities, 64 m.g.d. and 80 m.g.d. Awarded on basis of latter. Prices on piping and equipment, filter floor and electrical work on which bids were opened at the same time contained too many lump sum items for publication.

BIDS: Six bids were opened December 6, 1939 for the structures, ranging from the contract low of $999,857 to $1,279,933. Sixteen bids were opened on the same day for the reservoir construction, ranging from $583,861, the contract low, to $758,578. In the bidding, it was stipulated that a deduction of $12,000 was to be made if the low bidder received contracts for structures and reservoir. As this was the case, deduction was made, but it does not appear in the following tabulation of bids.

DIVISION L—STRUCTURES, FILTER PLANT

LOW BIDDERS:

1. Jerome A. Utley, Detroit, Mich. (contract) . $999,857
2. A. Bentley & Son, Toledo, Ohio..... 1,015,344
3. Bryant & Detwiler, Detroit, Mich..... 1,021,508

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	83,000 c. y.	$0.30	$0.30	$0.50
2. Rock excavation	10 c. y.	20.00	1.00	10.00
3. Selected fill mat'l	200 c. y.	3.00	2.50	2.00
4. Backfill and embankments	65,000 c. y.	.32	.253	.50
5. Fill over structures	7,600 c. y.	.45	.253	.70
6. Dispose surplus excav. mat'l	8,000 c. y.	.40	.405	.60
7. Wood sheeting, left in place	10 M bm.	50.00	25.00	20.00
8. Steel sheeting, left in place	10,000 lb.	.03	.01	.01
9. Wood sheet piling	20 M bm.	150.00	30.00	50.00
10. Steel sheet piling	20,000 lb.	.05	.04	.04
11. Timber piles	25,000 l. f.	.46	.425	.50
12. Pile loading tests	8 ea.	125.00	102.00	100.00
13. Plank and timber found'n	20 M bm.	50.00	30.00	30.00
14. Reinforcing steel bars	4,000,000 lb.	.038	.036	.04
15. Reinforcing mesh	5,000 lb.	.10	.06	.09
16. A-1 conc., walls, beams, slabs	14,000 c. y.	17.25	20.60	17.75
17. A-2 conc., floors and footing	8,000 c. y.	9.30	11.60	12.90
18. Cl. B concrete	900 c. y.	11.90	10.00	12.00
19. Precast concrete	10 c. y.	50.00	30.00	10.00
20. Rubbed finish	150,000 s. f.	.10	.058	.07
21. Concrete baffles	20 ea.	100.00	92.50	90.00
22. Wash water troughs	360 ea.	80.00	36.50	55.00
23. Sheet copper expan. joints	800 l. f.	.80	1.00	2.00
24. ½-in. sheet mastic. expan. joints	3,000 s. f.	.20	.26	.20
25. Painted asphalt joints	600 s. y.	.30	.50	.50
26. Poured asphalt joints	250 gallon	1.00	.80	3.00
27. Common brick masonry	20 c. y.	30.00	23.00	22.00
28. Structural steel	900,000 lb.	.055	.044	.05
29. Misc. steel and iron	16,000 lb.	.11	.12	.12
30. Iron castings	30,000 lb.	.10	.07	.08
31. Floor grating	200 s. f.	2.00	1.80	1.80
32. Vitr. tile underdrains	2,900 l. f.	.22	.30	.20
33. Surface drains	24 ea.	2.00	1.00	2.00
34. Bronze, brass and copper	200 lb.	1.00	.75	.50
35. Overflow drain piping	L.S.	3,700.00	2,880.00	3,100.00
36. Wood baffles, reaction basin	L.S.	5,000.00	3,480.00	2,150.00
37. Wood baffles, carbonation cham	L.S.	3,400.00	3,000.00	1,640.00
38. Stirring mechanisms	L.S.	28,500.00	30,000.00	26,000.00
39. Sludge collecting mechanisms	L.S.	77,000.00	81,500.00	82,000.00
40. Heating equipment, piping	L.S.	8,000.00	9,000.00	8,400.00
41. Plumbing and fixtures	L.S.	4,000.00	3,480.00	4,200.00
42. Sump pumps	L.S.	1,300.00	1,240.00	1,400.00
43. Superstructures	L.S.	179,400.00	176,200.00	155,000.00
44. Field painting	L.S.	7,200.00	12,000.00	5,500.00
45. Field office building	L.S.	9,000.00	10,000.00	8,500.00
46. 10-in. sanitary sewer	5,245 l. f.	2.80	2.20	2.00
47. Standard manholes	180 l. f.	15.00	15.00	12.00
48. 6-in. water main	375 l. f.	3.00	2.65	2.00
49. Valves and connection	L.S.	200.00	108.00	350.00

DIVISION P—RESERVOIR

LOW BIDDERS:

1. Jerome A. Utley, Detroit, Mich. (contract).. $583,861
2. Lombardo Brothers, Toledo, Ohio..... 600,886
3. A. Bentley & Son, Toledo, Ohio..... 601,489

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	265,000 c. y.	$0.27	$0.23	$0.284
2. Rock excavation	10 c. y.	20.00	1.00	1.00
3. Selected fill material	200 c. y.	3.00	3.00	2.50
4. Backfill and embankments	115,000 c. y.	.24	.10	.253
5. Fill over structures	29,000 c. y.	.30	.50	.253
6. Dispose surplus material	23,000 c. y.	.40	.10	.25
7. Wood sheeting, left in place	10 M bm.	50.00	10.00	25.00
8. Steel sheeting, left in place	10,000 lb.	.03	.01	.01
9. Wood sheet piling	20 M bm.	150.00	10.00	30.00
10. Steel sheet piling	20,000 lb.	.05	.01	.04
11. Timber piles	25,000 l. f.	.46	.50	.435
12. Pile loading tests	8 ea.	125.00	100.00	102.00
13. Plank and timber found'n	20 M bm.	50.00	10.00	30.00
14 Reinforcing steel	5,000,000 lb.	.037	.042	.0373
15. Reinforcing mesh	5,000 lb.	.10	.10	.06
16. Cl. A-1 conc., walls, beams, slabs	10,500 c. y.	15.35	17.00	16.25
17. Cl. A-2 conc., floors and footings	8,000 c. y.	9.00	9.00	10.30
18. Class B concrete	1,250 c. y.	10.44	8.00	10.20
19. Precast concrete	10 c. y.	50.00	10.00	30.00
20. Concrete baffles	34 ea.	110.00	200.00	107.00
21. Sheet copper expan. joints	60 l. f.	.80	1.00	1.00
22. Misc. steel and iron	2,000 lb.	.11	.15	.14
23. Iron castings	6,000 lb.	.10	.15	.05
24. Vitr. tile underdrains	6,600 l. f.	.22	.40	.30
25. Surface drains	63 ea.	2.00	2.00	1.00
26. Sluice gates and flap valves	L.S.	9,300.00	15,000.00	10,300.00

FERRY PIER, MICHIGAN

OWNER: Michigan State Highway Department, M. D. Van Wagoner, Commissioner, Lansing, Mich.

PROJECT: Addition to ferry pier in village of Mackinaw City to protect existing piers.

CONDITIONS: Rail transportation facilities available. Materials to be furnished by owner, and project to be completed by Mar. 15, 1940. Solid rock may be encountered. Labor rates are: skilled, $1.12½ per hr.; semi-skilled, 75c. per hr.; and common, 50c. per hr.

BIDS: Five bids were received December 13, 1939, ranging from the contract low of $13,571 to $22,450.

LOW BIDDERS:

1. Luedtke Engr. Co., Frankfort, Mich. (contract) $13,571
2. Willits & Schweinsberg Constr. Co., Bay City, Mich. 13,628
3. Love Constr. & Engr. Co., Muskegon, Mich. 15,385

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Steel sheet piling, furnished	6,200 s. f.	$1.00	$0.80	$0.61
2. Steel sheet piling, driven	6,200 s. f.	.50	.80	1.30
3. Tremie concrete	100 c. y.	16.00	25.00	20.00
4. Cement	170 bbl.	2.50	2.25	2.00
5. Fabr. and erect. struct. steel	2,000 lb.	.50	.12	.15
6. 1-in. rc. by 24-in. drift bolts	420 ea.	1.00	1.00	2.00
7. ¾-in. rd. by 11-in. drift bolts	100 ea.	3.00	1.00	.50
8. Remove and replace tagging	263 l. f.	2.00	.25	.05

CONSTRUCTION REPORTS

Compiled by BUSINESS NEWS DEPARTMENT
Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, MANAGER
(Daily service also available—Write for details)

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

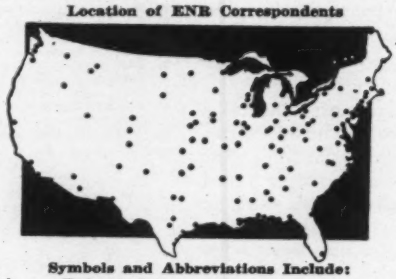
Classes of Construction
(Named in order of Listing)

Water Supply	Unclassified
Sewerg. Waste Disposal	Materials, Equipment
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads); BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR); LOW BIDDERS ($500,000 projects and over); CONTRACTS AWARDED

Location of ENR Correspondents



Symbols and Abbreviations Include:

✦ Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily

WATER SUPPLY

PROPOSED WORK

Calif., Martinez — Election Mar. 15 in Pleasant Hill Dist. to determine whether or not to form Pleasant Hill Water dist. which would then be annexed by East Bay Municipal Utility Dist., 512-16 St., Oakland. Project involves laying 76,366 ft. pipe line and construct storage and pump. facilities. $100,000.

Colo., Creede—WW sys. $30,000.

✦**Illinois**—U. S. Eng., 932 Post Office Bldg., Chicago, indefinitely postponed opening of bids water supply and sewerage sys. at La-Grange Lock in Illinois Waterway, near Beardstown. CD 1/11—ENR 1/18.

Kan., Coffeyville—WW repairs and new equip. $17,000.

Kan., Lansing — Delaware Twp., H. H. Lamborn, clk., water distr. sys. $15,000. Application made to WPA. R. M. LaFollette, Finance Bldg., Kansas City, Mo., engr.

Kan., Leavenworth—Deleware Twp., c/o Lee Bond, WW sys. $300,000.

Mass., Danvers—Bd. Selectmen, Town Hall, sketches made water supply filtration plant. $135,00. E. T. Killam, 142 Maiden Lane, New York, engr. CD 4/5—ENR 4/13.

Mo., St. Charles—WW imprvs. $15,000. Burns & McDonnell, 107 W. Linwood St., Kansas City, Mo., engrs.

Neb., Salem—G. E. Martin, clk., WW. $20,000. E. H. Durmire, 1802 B. St., Lincoln, engr. CD 12/27—ENR 1/4.

N. Y., Lake George—Bd. Trustees, imprvs. and addns. to water supply sys. Over $15,000. Morrell Vrooman, Inc., N. Main St., Gloversville, engrs.

N. Y., Seneca Falls—Bd. Trustees, J. Humphrey, clk., water plant. Over $250,000. Buck, Siefert & Jost, 112 E. 19 St., New York, engrs. CD 7/28/38—ENR 8/4/38.

N. Y., Utica—Municipal Water Comn., H. B. Miles, supt. Water, City Hall, suspension of pipe line across Trenton Falls Chasm, etc. Over $15,000.

N. Y., Utica—Municipal Water Comn., City Hall, H. B. Miles, supt. Water, 1½ mi. pipe, 13 hydrants, elevated water tank in town of Schuyler, suburb of here. $22,115.

N. C., Dover—Surveys WW and sewage disposal plant. Mrs. W. A. Wilson, mayor. Seeking Federal aid for same.

N. C., Pink Hill—Voted $12,000 for WW and $8,000 for sewer imprvs. J. F. May, mayor. CD 10/31—ENR 11/2.

N. C., Sanford—Filed application with WPA for major imprvs. in city's water and sewerage sys., exten. water and sewer lines, enlarging water plant. $68,834. W. R. Williams, mayor.

O., Conneaut—New c.i. watermain from high level bridge to Thompson Rd. in East Conneaut. $20,000. W. Kantola, city engr.

O., Hamler—Water supply complete. $50,000. Champe-Finkbeiner & Assoc., Nicholas Bldg., Toledo, engrs. CD 11/16—ENR 11/23.

O., Portsmouth—Exten. water lines to points in west side of city. $104,000. Application made for WPA grant. C. S. Stevenson, city engr. CD 5/5—ENR 5/11.

O., Toledo—Exten. crosstown trunk main Lake Erie water supply. $200,000. Greeley & Hansen, 110 Cherry St., engrs.

Okla., Hobart—H. C. Huber, mayor, defeated bonds WW extens. $18,000. V. V. Long & Co., Colcord Bldg., Oklahoma City, engrs. CD 1/3.

Okla., Seminole—Voted bonds watermain extens. and 2 drilled water wells. $35,000. W. L. Benham, Fidelity Bank Bldg., Oklahoma City, engr.

Tex., Fort Worth—S. H. Bouthwell, city mgr., WW imprvs., moving and rehabilitating south side booster plant from 5 and Berry Sts. to 8 and Jessamine Sts. $30,000. Application filed with WPA. W. O. Jones, city engr.

Tex., Omaha—R. Horn, mayor, WW. elevated tank, well and distr. sys. $40,000. WPA. Freese & Nichols, Capps Bldg., Fort Worth, engr.

Wis., Cambridge—Village Water Comn., iron removal and water softening plant, 2 pressure filter tanks, brine tank, pump. W. G. Kirchoffer, 22 N. Carroll St., Madison, engr.

Wis., Hawkins—J. G. Odegard, village clk., WW sys. and exten. sanitary sewerage sys. General Eng. Co., Portage, engr.

Wis., Manawa—WW sys. $198,000. A. E. McMahon Eng. Co., engrs., Menasha, applied for WPA funds.

B. C., Pitt Meadows—Vancouver and District Water Bd., 9¼ mi. watermain from Port Coquitlane. $169,000.

B. C., Port Alberni—Municipality, replacing 24,000 ft. wooden water pipe by c.i. pipe. H. S. Fowlie, Port Alberni, engr.

BIDS ASKED

Bids Asked February 13

N. J., Marlboro—Dpt. Institutions & Agencies, State House, Trenton, altering existing water treatment plant, installing 4 deep well pumps with pump houses and c.i. pipe line for connecting pumps to plant at State Hospital.

Tex., San Antonio—Con. Q.M., Fort Sam Houston, deep water well at Kelly Field.

Bids Asked February 14

Mass., Palmer—Commonwealth of Massachusetts, Dt. Mental Health, 100 Nashua St., Boston, driving wells at Monson State Hospital. CD 4/5—ENR 4/13.

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., New York, new buildings at Oconee and Rosedale pump. stations, Sunrise Hy., Queens Boro, and at Merrick and Matowa pump. stations, Sunrise Hy., Nassau Co.

Bids Asked after February 14

Wyo., Gillette—R. Montgomery, mayor, WW imprvs. $57,000, sewer imprvs. $28,000. R. L. Streeter, engr.

Bids Asked February 15

O., Farmington—WW sys. and storage tank. $60,000. CD 6/30—ENR 7/6.

Bids Asked February 23

D. C., Wash.—Dist. Comrs., District Bldg., 48 ln. rein.-con. c.i. or steel trunk watermain, appurtenances from point in grounds of U. S. Soldiers Home to Dist. Pump. Station, Second and Bryant Sts. N.W.; adv. ENR 2/8.

Bids Asked March 5

✦**Calif., Palo Alto**—Veterans Administration, Arlington Bldg., Wash., D. C., deep well pump.

Bids Asked

N. Y., Long Beach—Filtration plant, capable of treating and delivering no less than 3 mgpd. water supply at minimum 65 lb. pressure into city's water distr. sys. H. Jacobson, city clk.

CONTRACTS AWARDED

Calif., Manhattan Beach—Imprv. water sys., removing, relocating, installing pipe, valves and hydrants., etc., **WPA.** $49,500. J. R. Newville, City Hall, engr.

Colo., Flagler—Watermains, reconstructing municipal electric distr. sys., curbs, gutters. **WPA. $13,787.**

Fla., Miami—Emergency imprvs. to water supply sys., own forces. **$46,000** funds appropriated. E. G. Sewell, mayor. F. J. Kelly, city clk.

Ill., Greenup—WW sys., tank on tower, etc., **WPA.** Total est. about **$35,000.** Bids asked Feb. 8, c.i. specials, leadite, jute, fire hydrants, gate valves, boxes, water meters, boxes, copper pipe, tank on tower, gravel packed well and pump to cost $20,000.

Kan., Summerfield—H. A. Berens, mayor, WW imprvs. **WPA. $37,000.** CD 10/26—ENR 10/26.

Kan., Wichita—Contr. 11, installing electrical distr. sys., remote control sys., motors in connection with WW project, to Jack Palmer Constr. Co., Trenton, Mo. **$88,239.** Bids 1/23, awarded 1/25. CD 1/8—ENR 1/11.

La., Thibodeaux—At office C. E. Delas, mayor, WW imprvs. Sect. 2, constructing 14 in. c.i. pipe line, to Williams Bros. Corp., Natl. Bank of Tulsa Bldg., Tulsa, Okla. **$63,028*****Sect. 1, furnishing 14 in. c.i. pipe, in connection with same, to U. S. Pipe & Fdry. Co., 1 Natl. Bank Bldg., Birmingham, Ala. **$106,570*****Sect. 3, furnishing, erecting 250,000 gal. tank on 100 ft. tower, etc., to Chicago Bridge & Iron Co., Liberty Bank Bldg., Dallas, Tex. **$25,600.** Grand total $195,198. Bids 1/26. CD 12/26—ENR 12/28.

Mass., Boston—Commonwealth of Massachusetts, Metropolitan Dist. Water Supply Comn., R. N. Molt, secy., 20 Somerset St., furnishing, del. valves, etc., Contr. 95, in Marlboro, Southboro, Framingham, Wayland, Natick, Newton, Weston, Malden, Melrose and Stoneham, Groups A and B, valves, to Chapman Valve Mfg. Co., 71 A St., South Boston, **$4,126** and **$34,044** respectively *** Group C, valves, to Crane Co., 48 W. 1 St., South Boston, **$2,976*****Group F, hardware, to Evans Mill Supply Co., 222 Summer St., **$583***** Group G, granite, to H. E. Fletcher Co., West Chelmsford, **$1,249*****Group H, hardware, to Chandler & Barber Co., 113 Huntington Ave., **$465*****Group I, piping, to Pittsburgh Piping & Equip. Co., 10 High St., **$7,535.** Grand total $50,978. **PWA.** Bids 1/25, awarded 1/29. CD 1/9—ENR 1/11.

Mass., Worcester—City, Supt. Water Dpt., City Hall, 1 story, 30x45 ft. brick pump. sta., Tory Fort Lane. **WPA.** Equip., to Fairbanks-Morse & Co., Inc., 178 Atlantic Ave., Boston. **$14,957.** Total est. over $15,000. Bids 1/30.

Mich., Detroit—Detroit Housing Comn., 735 Randolph St., c.i. watermains, vitr. and concrete sewers, brick, concrete manholes, railroad siding, on site of St. James-Herman Gardens housing project, to Frank J. Knight Co., 3681 Dunn Rd. **$202,215.** Geo. D. Mason Associates, 409 Griswold St., archts.

Minn., Little Falls—State, one 100,000 gal. elevated steel water tank, painting and alterations to existing tank, to Chicago Bridge & Iron Wks., 37 W. Van Buren St., Chicago, Ill. **$11,850*****furnishing, installing one 400 GPM turbine pump, to Layne-Western Co. of Minnesota, 3140 Snelling Ave., Minneapolis. **$2,020*****electric motor, to Crane Co. of Minn., 356 Bway., St. Paul. **$3,578*****one 400 GPM cap pressure type iron removal plant, to Refinite Corp., 1023 Harney St., Omaha, Neb. **$4,876,** all above at Camp Riley State Military Reservation. Grand total $22,324. CD 11/22—ENR 11/30.

N. Y., Saratoga Springs—Constructing 2,610 lin. ft. 6 in. c.i. watermains, to eliminate dead end mains, various streets. **WPA.** Over **$15,000.** C. Post, Old P. O. Bldg., Albany, ch. engr.

N. C., Mount Airy—WW sys. extens. **WPA. $24,607.** E. G. Doggett, Mount Airy, town engr. J. D. Thompson, Mount Airy, mayor.

O., Republic—A. R. Hesse, mayor, installing water distr. sys., elevated tank. **WPA. $78,000.**

O., West Milton—Bd. P. Affairs, elevated tank and fdns., to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. **$9,134;** waterworks building, to W. D. Benning, Piqua. **$7,961.** Bids 1/3. CD 12/29.

Okla., McAlester—City, c/o mayor, imprv. WW and distr. sys. **WPA. $77,631.** G. M. **Brown, engr.**

Okla., Oklahoma City—Drilling 12 water wells, each 45 ft. deep, to E. W. Baker, Bethany. **$10,800. Est. $15,000.** Bids 1/8, awarded 1/30. CD 1/3.